

SECTION III—REMARKS

This Amendment is in response to the Office Action mailed January 15, 2004, which action the Examiner made final. Claims 1 and 9 are amended herein to improve their clarity, and claims 1-16 remain pending in the application. Applicants respectfully request reconsideration of the application and allowance of all pending claims in view of the above amendments and the following remarks.

Rejections Under 35 U.S.C. § 103

The Examiner rejected claims 1-16 under 35 U.S.C. § 103(a) as obvious in view of, and therefore unpatentable over, U.S. Patent No. 6,510,265 to Giaretta et al (“Giaretta”) in view of U.S. Patent No. 5,892,866 to Bristow et al (“Bristow”). According to the Examiner, Giaretta discloses a mode scrambler comprising first and second ends, wherein a single mode optical fiber is coupled to a multimode optical fiber at 200, with a gap discontinuity between them. The Examiner concedes that Giaretta fails to disclose a diffuser in the gap, but alleges that Bristow discloses a diffuser in a gap between fibers. The Examiner concludes that it would have been obvious at the time the invention was made to a person having ordinary skill in the art to position the diffuser taught in Bristow in the fiber arrangement taught by Giaretta for diffracting the single mode into multiple modes for distributing signal transmission.

Applicants respectfully traverse the Examiner’s rejections. To establish a *prima facie* case of obviousness, three criteria must be met: (1) the prior art references must teach or suggest all the claim limitations; (2) some suggestion or motivation to combine the references must be found in the prior art; and (3) there must be a reasonable expectation of success. MPEP § 2143. As further explained below, the Examiner has not established a *prima facie* case of obviousness because criteria (1) and (2) have not been met.

Giaretta discloses a high-speed multi-mode fiber optical link. As shown in Figure 2, a short-pulse source 201 is coupled to a single mode fiber 205 positioned on a x-y translation stage 207. The x-y translation stage moves the end of the single-mode fiber in the x and y directions, thus scanning the output of the single-mode fiber in the x and y directions transversely to the input facet of a multimode fiber 209. A small gap separates the output facet of the single mode fiber 205 from the input facet of the multimode fiber 209 (col. 3, lines 52-56).

Bristow discloses a fiber optic mode scrambler. As shown in Figure 3, a laser diode 32 transmits an optical signal 34 through a first lens 36, which directs the optical signal through phase-only filter 37 to a second lens 38. The second lens 38 launches the optical signal 34 into a first fiber 40, through a fiber connector 42, and into second fiber 44. Both fibers 40 and 44 are multimode fibers. Bristow does not disclose that a single-mode fiber and a multimode fiber should be positioned in a fiber adapter. Bristow also does not disclose, teach or suggest that the phase-only filter 37 should be positioned in a fiber adaptor between a single mode fiber and a multimode fiber, but rather that the filter should be placed between the signal source and the launch end of a multimode fiber.

Claim 1, as amended, recites an apparatus combination including an optical fiber adaptor having a gap, a first end, and a second end, wherein a single mode optical fiber is coupled to the first end and a multimode optical fiber is coupled to the second end wherein “the single mode optical fiber and the multimode optical fiber are fixed relative to each other and the single mode optical fiber is substantially aligned with the multimode optical fiber.” The Examiner concedes that Giaretta does not disclose a diffuser positioned in a gap. As discussed above, Giaretta also does not disclose, teach or suggest that the single mode optical fiber and the multimode optical fiber should be coupled in a fiber adaptor and aligned and fixed relative to each other, and therefore cannot disclose a combination wherein “the single mode optical fiber and the multimode optical fiber are fixed relative to each other and the single mode optical fiber is substantially aligned with the multimode optical fiber.” Bristow discloses that phase-only filter 37 should be positioned between the signal source and the launch end of a multimode fiber, but does not disclose, teach or suggest that the filter should be inserted in a fiber adaptor between a single mode fiber and a multimode fiber. Bristow therefore cannot teach, disclose, or suggest the recited combination, which includes, among other things, “an optical fiber adaptor having a gap,” and “a diffuser disposed in the gap.” Since Giaretta and Bristow, taken together, do not disclose every element and limitation of the claim, element (1) is not met and there can be no *prima facie* case of obviousness.

Even if, for the sake of argument, Giaretta and Bristow did disclose every element recited in the claim, there could be no *prima facie* case of obviousness because the references do not teach, suggest, or otherwise provide motivation for the combination attempted by the Examiner. In fact, Giaretta teaches away from the claimed combination, because it teaches that the end of

the single mode fiber should be free so that it may move in the x and y directions, thus scanning the output beam from the single-mode fiber across the input facet of the multimode fiber. Giaretta thus cannot disclose, teach or suggest a combination wherein “the single mode optical fiber and the multimode optical fiber are fixed relative to each other and the single mode optical fiber is substantially aligned with the multimode optical fiber.” In fact, Giaretta teaches away from a combination with Bristow or with any other reference that involves coupling the ends of a single mode fiber and a multimode fiber, because such a combination would render the device of Giaretta nonfunctional. Similarly, Bristow does not teach or suggest the claimed invention because it disclosed that the phase-only filter should be positioned between the signal source and the launch end of a multi-mode fiber, not in an adaptor between a single-mode filter and a multi-mode filter. Since Giaretta and Bristow, taken together, do not teach, suggest, or otherwise provide motivation for the combination attempted by the Examiner, and in fact teach away from the combination attempted by the Examiner, element (2) of the *prima facie* case of obviousness is not met. For the above reasons, Applicants submit that claim 1 is in condition for allowance and respectfully request withdrawal of the rejection and allowance of the claim.

Regarding claims 2-8, if an independent claim is non-obvious under 35 U.S.C. § 103, then any claim depending therefrom is also non-obvious. MPEP § 2143.03; *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). As discussed above, claim 1 is in condition for allowance. Applicants submit that claims 2-8 are therefore allowable by virtue of their dependence on allowable claim 1, as well as by virtue of the features recited therein. Applicants therefore respectfully request withdrawal of the rejections and allowance of these claims.

Claim 9, as amended, recites a method combination including, among other things, “substantially aligning a single mode optical fiber and a multimode optical fiber using an optical fiber adapter having a single mode end and a multimode end,” “fixing the single mode optical fiber and the multimode optical fiber in their substantially aligned positions,” “disposing a diffuser between the single mode end and the multimode end of the optical fiber adapter,” “launching a single mode signal in the single mode end,” and “receiving a multimode optical signal in the multimode end.” As discussed above in connection with claim 1, Giaretta and Bristow, taken in combination, neither disclose every element and limitation recited in this claim, nor do they disclose, teach or suggest combination with each other. Applicants respectfully

submit that claim 9 is therefore in condition for allowance and respectfully request withdrawal of the rejection and allowance of the claim.

Regarding claims 10-16, if an independent claim is non obvious under 35 U.S.C. § 103, then any claim depending there from is also non obvious. MPEP § 2143.03; *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). As discussed above, claim 9 is in condition for allowance. Applicants submit that claims 10-16 are therefore allowable by virtue of their dependence on allowable claim 9, as well as by virtue of the features recited therein. Applicants therefore respectfully request withdrawal of the rejections and allowance of these claims.

Conclusion

Given the above amendments and accompanying remarks, all claims pending in the application are in condition for allowance. If the undersigned attorney has overlooked a teaching in any of the cited references that is relevant to allowance of the claims, the Examiner is requested to specifically point out where such teaching may be found. Further, if there are any informalities or questions that can be addressed via telephone, the Examiner is encouraged to contact the undersigned attorney at (206) 292-8600.


Charge Deposit Account

Please charge our Deposit Account No. 02-2666 for any additional fee(s) that may be due in this matter, and please credit the same deposit account for any overpayment.

Respectfully submitted,

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